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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/720,782	12/27/2000	Robert Charles Skerritt	602985.1002	4137

7590

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EXAMINER

HAMDAN, WASSEEM H

ART UNIT	PAPER NUMBER
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2858

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DATE MAILED: 04/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/720,782

Applicant(s)

SKERRITT ET AL.

Examiner

Wasseem H Hamdan

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-- The MAILING DATE of this c mmunication appears n the cover sh et with th correspond nce address --

Period f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Part III - DETAILED ACTION

Title

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. Suggestion: "Residual current detection device with resistive shunts".

Specification

2. The specification is objected to, because it is all one section, and it does not follow the format according to the MPEP. Please see below the "content of the specification" format:

Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a). The title of the invention should be placed at the top of the first page of the specification. It should be brief but technically accurate and descriptive, preferably from two to seven words.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) Reference to a "Microfiche Appendix": See 37CFR 1.96(c) and MPEP § 608.05. The total number of microfiche and the total number frames should be specified.
- (e) Background of the Invention: The specification should set forth the Background of the Invention in two parts:
 - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

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- (2) Description of the Related Art: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (f) Brief Summary of the Invention: A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (g) Brief Description of the Several Views of the Drawing(s): A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (h) Detailed Description of the Invention: A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. This item may also be titled "Best Mode for Carrying Out the Invention." Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (I) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet. (37 CFR 1.52(b)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps.

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- (j) Abstract of the Disclosure: A brief narrative of the disclosure as a whole in a single paragraph of 250 words or less on a separate sheet following the claims.
- (k) Drawings: See 37 CFR 1.81, 1.83-1.85, and MPEP § 608.02.
- (l) Sequence Listing: See 37 CFR 1.821-1.825.

3. On page one, lines 4 and 19, the word “utilising” is misspelled, the applicant meant “utilizing”. Correction is required.

Drawings

4. The drawings are objected to because box 17 in figures 1 and 2, require descriptive legends (such as Processor). Correction is required.

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: There is no support in the specification that each converter is in the form of an integrated circuit mounted on a corresponding one of the resistive shunts, which they are claimed in claims 5-7.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable Mayell et al. (US Patent 5,701,253).

Regarding claim 1, Mayell et al. disclose a residual current detection device [FIG. 1; column 1, lines 64-67; column 2, lines 1-8] comprising a plurality of resistive shunts [FIG. 1 (12a-12c); column 3, lines 46-47 (current shunt is the same as resistive shunts)]; for connection in respective ones of a plurality of lines [FIG. 1 (A, B, C)] through which current can flow to and from a load [FIG. 1 (16); column 3, lines 50], and respective detector means is provided for each shunt [FIG. 3; column 3, lines 34-36], each of the respective detector means being sensitive to the voltage developed across the shunt for providing a signal indicative of the current flowing through the shunt [FIG. 3; column 3, lines 34-36].

Mayell et al. discloses the essential elements of the claimed invention. However, Mayell et al. does not explicitly disclose any imbalance between the currents flowing through the shunts can be detected. Mayell et al. discloses determining difference between voltages and phase angle between voltage and currents, and in order to determine the difference between the phase angle, and phase power between the voltage and current [column 4, lines 40-49], one skilled in the art must determine the residual current between the two lines, which technically is equivalent to detecting any imbalance between the currents flowing through the shunts. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to

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modify the teachings of Mayell et al. by including any imbalance between the currents flowing through the shunts can be detected. The skilled artisan would have been motivated to modify Mayell et al. for the purpose for obtaining the difference between current and hence determine the current leakage or residual current.

Regarding claim 2, Mayell et al. discloses the detector means comprising an analog to digital converter for each shunt and a processor for receiving the digital signals from the converters [FIG. 2 (51a, 62a, 51b, 62b, 56c, 62c; FIG. 3 (56); column 4, lines 55-56]. The rationale for determining whether a current imbalance exists was discussed in claim 1 above.

Regarding claim 3, Mayell et al. discloses each shunt takes the form of a composite strip having conductive portions at its ends and a resist portion interconnecting the conductive portions [FIG. 112a-12c; FIG. 2 (12a-12c)].

Regarding claim 4, Mayell et al. discloses that the analog to digital converter for each shunt includes a delta-sigma modulator [FIG. 2 (51a, 62a, 51b, 62b, 56c, 62c; FIG. 3 (56); column 4, lines 55-56].

Mayell et al. discloses the essential elements of the claimed invention. However, Mayell et al. does not explicitly disclose that the A/D converter produces a high frequency signal digital data stream which is converted by decimation filtering into a multi-bit digital data stream at a lower

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frequency. Mayell et al. discloses that the A/D converter modifies the streams of digital bits to remove the effect of high frequency noise [column 6, lines 62-67; column 7, lines 1-6], one which technically it is equivalent and could lead to the same results (please see court case below). One skilled in the art having the Mayell design (apparatus) would be able to obtain that A/D converter which produces a high frequency signal digital data stream which is converted by decimation filtering into a multi-bit digital data stream at a lower frequency. It would have been obvious to a person having ordinary skill in the art at the time of the invention was made to modify the teachings of Mayell et al. by including A/D converter produces a high frequency signal digital data stream which is converted by decimation filtering into a multi-bit digital data stream at a lower frequency. The skilled artisan would have been motivated to modify Mayell et al. for the purpose of obtaining the difference between current and hence determine the current leakage or residual current.

Apparatus is: "What it is, not what it does"

It should be emphasized that "apparatus claims must be structurally distinguishable from the prior art." MPEP 2114. In *In re Danly*, 263 F. 2d 844, 847, 120 USPQ 528, 531 (CCPA 1959) it was held that apparatus claims must be distinguished from prior art in terms of **structure** rather than **function**. In *Hewlett-Packard Co v Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990), the court held that: "Apparatus claims cover what a device **is**, not what it **does**." (emphases in original). To emphasize the point further, the court added: "An

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invention need not **operate** differently than the prior art to be patentable, but need only **be different**" (emphases in original).

That is, in an apparatus claim, if a prior art structure discloses all of the **structural elements** in the claim, as well as their relative juxtaposition, then it **reads** on the claim, regardless of whether or not the **function** for which the prior art structure was intended is the same as that of the claimed invention.

Regarding claim 5, Mayell et al. discloses each converter is in the form of an integrated circuit mounted on a corresponding one of the resistive shunts [FIG. 2; FIG. 3; FIG. 4; column 3, lines 34-37; column 4, lines 50-55].

Regarding claim 6, Mayell et al. discloses each integrated circuit has analog input terminals connected by lead wires to the two copper end portions of the corresponding one of the resistive shunts [FIG. 2; FIG. 3; FIG. 4; column 3, lines 34-37; column 4, lines 50-55].

Regarding claim 7, Mayell et al. discloses the integrated circuit also has a terminal connected to a voltage reference source and includes a second converter for providing a digital signal stream dependent on the voltage on one of the copper end portions of the associated one of the shunts [column 6, lines 62-67; column 7, lines 1-6].

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Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wasseem Hamdan whose telephone number is (703) 305-3968. The examiner can normally be reached Monday-Thursday from 700AM-400PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le can be reached on (703) 308-0750.

The fax phone number for this Art Unit is (703)308-7722 or (703)308-7724.

Any inquiry of a general nature or relating to the status of this application should be directed to the Receptionist at (703) 305-3800.

9. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 308-7722 or (703) 308-7724, or (703) 305-3431, or (703) 305-3432 (for formal communications intended for entry, please label "FORMAL" and sign as attorney of record)

Or:

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(703) 305-9724 (for informal or draft communications, please label "PROPOSED"
or "DRAFT" and prominently label PLEASE DELIVER DIRECTLY TO
EXAMINER)

Hand-delivered responses should be brought to Crystal Plaza 4 [fourth Floor
(Receptionist)], 2201 South Clark Place, Arlington, VA. 22202.

Wasseem H. Hamdan



April 9, 2002



N. Le
Supervisory Patent Examiner
Technology Center 2800